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A Virtual Group Study Platform

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***Abstract*—** The advent of the Coronavirus Disease 2019 (COVID19) pandemic has significantly shifted the landscape of education and information delivery, particularly among medical professionals, who have increasingly turned to online teaching platforms. This editorial seeks to delve into the usability and practicality of audio and video conferencing platforms in the current healthcare scenario. A comprehensive review of various available online platforms, including Zoom, Google Meet, Google Classroom, Microsoft Teams, Cisco Webex, GoToMeeting, and Say Namaste, was conducted. The focus was on highlighting and comparing their essential features, benefits, supported systems and operating systems, user interface, participant capacity, pricing packages, security measures, customer support, and limitations.

The comparative analysis provides insights into the strengths and weaknesses of each platform, aiding potential users in making informed decisions based on their specific needs. The educational implications derived from this examination serve as a guide for selecting a suitable platform, taking into account the unique requirements of medical professionals engaged in online education. Additionally, recommendations for future research in this evolving field are presented to foster continued improvement and innovation in online teaching platforms.

Keywords: Online teaching platform, Audio and video conferencing platforms, Education, Information delivery.

I. INTRODUCTION

In VR, also known as artificial environment, is a modern technology that employs complex systems to generate synthetic stimulation, replacing real-world sensory information. This involves users entering virtual scenes and utilizing special equipment like helmets, data gloves, or input devices such as keyboards and mice for real-time interaction with the virtual environment (Shin, 2018). The core of VR originated in the 1960s, and despite early discussions in the 1990s by the Interactive Systems Project Working Group, technical limitations and high costs hindered its development. However, with advancements in technology and the availability of affordable VR devices for entertainment, VR experienced a resurgence.

In the field of education, VR has become widely utilized, offering students teaching aids that closely resemble real-life scenarios and diverse personalized learning environments, transforming traditional classrooms into engaging spaces for active exploration and interaction (Rogers, 2019). Described as a learning aid for the 21st century, studies indicate that students retain more information and can better apply what they learn through VR exercises (Krokos et al., 2019). With the potential to enhance learning experiences, researchers, organizations, and educators are increasingly focusing on VR technology.

While VR's application in education is not new, recent advancements in visualization and interaction have made it more appealing, especially in higher education. VR's core characteristics—immersion, interactivity, and imagination—offer significant advantages in higher education (Ryan, 2015). Immersive experiences allow students to be fully engaged in realistic virtual environments, interactive elements provide immediate feedback, and the imaginative aspect enhances creative thinking and innovation.

Despite the growing attention to VR in academia, some issues persist in the research landscape. Scholars often combine virtual reality, augmented reality, and mixed

reality in their studies of educational applications (Alalwan et al., 2020; Duarte et al., 2020). Moreover, many studies on VR in higher education begin with theoretical perspectives, exploring the potential of VR in specific disciplines, with limited empirical research (Moore, 1995; Hoffman and Vu, 1997). Additionally, most research reviews focus on specific disciplines or courses, lacking a comprehensive analysis of VR's overall application in higher education. Have you ever considered alternative learning environments outside the traditional classroom setting that might prove more effective? One idea is to expose students or employees to practical insights in settings such as a car manufacturing unit. However, logistical challenges, including travel distance, accommodation limitations, cost, time constraints, and potential risks, make this approach impractical for large groups. The solution lies in Virtual Learning Environments (VLEs).

Through the use of VLEs, students or employees can participate in virtual experiences from the convenience of their mobile devices, tablets, virtual reality devices, computers, or laptops. This approach allows them to attend meetings, read documents, operate equipment, access computers, or observe processes like an assembly line remotely. For instance, a geology student could monitor equipment during an earthquake, a biology student could observe live reproduction processes, and a chemical engineering student could understand the paint manufacturing process and experiment with various compositions.

In this context, the importance of contextualized content becomes evident. Contextualizing content helps make concepts more concrete, facilitating better understanding, recall, knowledge integration, and practical application.

Stonebreaker and Hazeltine (2004) define virtual learning as the delivery of learning through electronic mediation that bridges the gap when the instructor and learner are separated in time or place. Wilson (1996) describes Virtual Learning Environments (VLEs) as computer-based environments that are relatively open systems, allowing interactions and encounters with other participants. This definition expands the conventional understanding of the learning environment by incorporating dimensions such as interaction, technology, and control (Piccoli, Ahmad, and Ives, 2001).

VLEs support both blended and online (distance) learning, serving various purposes such as providing lecture notes, presentations, additional learning materials, assignments, feedback, useful web links, grades, discussion boards, and communication among students and tutors (Halawi, Pires, and McCarthy, 2009). VLEs are also known as technologymediated learning, web-enhanced learning, web-based learning, and learning management systems in the literature.

II. LITERATURE REVIEW

Recent studies underscore that the implementation of elearning extends beyond a technological solution. Social factors (Schepers and Wetzels, 2007; Tarhini et al., 2014b; 2015), individual factors (Liaw and Huang, 2011), and organizational factors, such as facilitating conditions (Sun and Zhang, 2006), play pivotal roles. Behavioral and cultural factors also significantly impact the development and usage of information technology (Kim and Moore, 2005).

Trends in E-Learning:
Fischer et al. (2015) conducted a trend study using proceedings from German-speaking e-learning conferences. Their analysis highlighted the developmental potential of learning management, mobile learning, virtual worlds, e-portfolios, social media, and Massive Open Online Courses (MOOCs) in German higher education.

Impact on Student Achievement:
Moravec et al. (2015) investigated how e-learning tools affect student achievement, revealing positive effects on results. Additionally, Mothibi (2015) found that ICTbased e-learning had a statistically significant positive influence on students' academic achievements.

Mobile Learning Approaches:
Scholtz and Kapeso (2014), Almajali et al. (2016), and Shannak (2013) explored factors influencing mobile learning (m-learning) approaches. Applying the Technology Acceptance Model (TAM), they found a positive correlation between perceived ease of use, perceived usefulness, and the acceptance of m-learning systems.

Integration of Web 2.0 in E-Learning:
Pieri and Diamantini (2014) explored the integration of Web 2.0 in e-learning at the University of Milano Bicocca. Using the Think tag Smart platform, they highlighted strengths such as resource sharing and interactivity, along with weaknesses like slowness and a lack of immediacy.

E-Education in Pharmacy:
Salter et al. (2014) showcased the benefits of education in pharmacy, emphasizing its effectiveness in clarifying pharmaceutical concepts and elements. The study highlighted the precision, speed, and cost effectiveness of e-education in pharmacy.

Teacher Satisfaction in E-Learning: Teo (2014) investigated teacher satisfaction with elearning programs. Using structural equation modeling, the study found that tutor quality, perceived usefulness, perceived ease of use, course delivery, and course satisfaction were significant predictors of e-learning satisfaction.

Discipline-Related Attitudes Towards E-Learning: Suri and Sharma (2014) examined the relationship between students' disciplines and their attitudes towards e-learning. The study, conducted at Panjab University Chandigarh, revealed a significant association between students' disciplines and their attitudes towards computer and e-learning.

Dynamic Resource Management in E-Learning: Arasteh et al. (2014) proposed a dynamic resource management model for enhancing the availability and dependability of e-learning services in the grid system.
The model, employing dynamic replication, demonstrated higher availability compared to basic resource management services.

Challenges of Mobile Technology in Adult Education: Ceobanu and Boncu (2014) theoretically explored challenges associated with mobile technology in adult education, positioning mobile learning as an extension of e-learning with the capability for anytime, anywhere access.

Impact of Training in Suicide Prevention:
Beurs et al. (2015) evaluated the impact of an elearning-supported train-the-trainer program on suicide prevention guideline adherence among mental health professionals. The study showed improvement in individual professionals' adherence, knowledge, and confidence.

Integration of Knowledge Management and E-Learning: Judrups (2015) discussed the integration of knowledge management and e-learning, emphasizing their shared focus on knowledge capture, sharing, application, and generation. The analysis confirmed integration approaches based on common ground, primarily identified as learning.

Automated Learning Support System:
Jakobsone and Cakula (2015) explored the efficiency of an automated learning support system, emphasizing the improved quality of knowledge flow and recommendations for advancing work-based learning. The study highlighted the need for real and simple innovations to address adult learners' problems effectively..
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III. METHODOLOGY

1. Data Collection Procedure:

The data collection process involved distributing the questionnaire online to the targeted participants. The utilization of the Google Drive application for questionnaire administration ensured accessibility and ease of completion for the students. This digital approach not only facilitated a quicker response but also reduced logistical challenges associated with traditional paper-based surveys.

2. Questionnaire Content:

The questionnaire comprised 12 items strategically crafted to capture a holistic understanding of students' experiences with the Moodle learning platform. The items addressed various aspects, including user-friendliness, engagement levels, perceived effectiveness in learning, and overall satisfaction with the platform. The closed-ended nature of most questions aimed to streamline data analysis while still allowing for specific feedback.

3. Demographic Representation:

The study intentionally included students from different faculties within the University POLITEHNICA of Bucharest. This deliberate inclusion of diverse academic backgrounds enhances the generalizability of the findings and offers valuable insights into how students across various disciplines perceive and utilize e-learning tools like Moodle.

4. Gender Parity:

The equal participation of male and female students is noteworthy, indicating a balanced interest in using the Moodle platform to enhance learning effectiveness. Understanding the preferences and experiences of both genders is crucial for designing inclusive and effective online learning environments.

5. Significance of Faculty Diversity:

The inclusion of students from faculties such as The Faculty of Automatic Control and Computer Science, The Faculty of Engineering and Management of Technological Systems, The Faculty of Applied Chemistry and Materials Science, and The Faculty of Engineering in Foreign Languages ensures a comprehensive representation. This diversity allows for a nuanced analysis of how students with varied academic focuses perceive and engage with the Moodle platform.

6. Analytical Potential:

The collected data holds significant analytical potential. Subsequent analysis will delve into identifying trends, preferences, and challenges faced by students in their interaction with the Moodle learning platform. The findings may offer actionable insights for educators, administrators, and policymakers aiming to optimize e-learning experiences.

7. Future Implications:

The outcomes of this questionnaire-based study are poised to have broader implications for the ongoing evolution of virtual learning environments. Understanding students' perceptions and preferences can guide the implementation of future technologies, instructional design enhancements, and support mechanisms tailored to the unique needs of diverse learnerss.

IV. RESULTS & DISCUSSIONS

Result:

The survey encompassed students across various academic years, predominantly consisting of secondyear students (53%), followed by third-year (20%), firstyear (17%), and fourth-year students (10%). Notably, the study unveiled a high level of awareness regarding the Moodle platform, with 82% of respondents acquiring knowledge through university courses. The variation in platform utilization was apparent, with 45% of participants reporting non-usage, particularly among first-year students in faculties where its use is not obligatory. Conversely, 28% used the platform quite rarely, and a minority employed it daily, predominantly.

Students expressed a keen interest in increased platform utilization, with 88% indicating a desire for more frequent usage, underscoring an untapped potential that could be harnessed with targeted initiatives. Despite the varied usage patterns, 80% of respondents acknowledged the platform's usefulness, whereas 14% remained uncertain, and 6% denied its utility, possibly stemming from a perception that traditional teaching methods suffice.

Furthermore, the impact on learning efficiency garnered insights, with 57% of students affirming that the platform enhances the learning process, 5% expressing a negative stance, and 3% remaining unsure. This points towards both positive perceptions and areas for improvement.

The study delved into the purposes of platform use, revealing that over 40% utilized it for downloading course materials, while 22% limited usage to homework and projects. Interactive features like forums, chat, and assessments recorded lower usage, suggesting a potential disconnect or competition with other socializing platforms.

In summary, the findings underscore the multifaceted landscape of Moodle platform utilization, with opportunities for increased engagement, faculty promotion, and initiatives to enhance student understanding. The study provides valuable insights for refining the integration of the platform into the academic journey, bridging gaps in awareness and usage among diverse student cohorts.

Discussion:

1. Limited Awareness and Attraction to Technology:

Students exhibit awareness is takes place every place in the world .However, their knowledge about the platform's functionalities appears incomplete.
The allure of technology, the internet, and technical aspects attracts students, demonstrating their interest in these elements.

2.Desire for Stimulation and Support:

Students express a willingness to use the Moodle platform if stimulated by teaching staff. They seek additional materials and facilities on the platform to enhance their learning experience. The provision of extra resources is perceived as a facilitator for the learning process.

3.Need for Active Involvement of Teaching Staff:

Students desire increased involvement and enthusiasm from teaching staff in utilizing the Moodle platform. Active participation and interest from educators are seen as crucial elements for fostering effective use of the new teaching environment.

4.Challenges in Platform Adoption:

A relatively small number of first-year students currently use the platform.
Lack of awareness about the platform's existence contributes to its underutilization.
Some teaching staff reservations, particularly regarding forum activities, impact student engagement. Recommendations include early and comprehensive information dissemination to first-year students about platform usage.

5.Interest in Interaction and Immediate Feedback:

Students express a strong interest in interacting with teachers on the Moodle platform.
Creating a friendly learning environment through teacher-student interaction is considered valuable. Immediate feedback is highlighted as a significant benefit of using the platform.

6. Empowerment through Learning Autonomy:

The use of the Moodle platform is associated with increased learning autonomy for students.
Autonomy in learning is recognized as a positive outcome resulting from platform usage.

7. Recommendations for Improvement:

Conduct comprehensive orientation sessions about the platform's existence and functionalities. Encourage teaching staff to actively engage with the platform, providing additional materials and fostering a supportive learning environment. Address reservations among teaching staff, particularly regarding forum activities, to promote broader adoption of the platform. Emphasize the benefits of immediate feedback and interactive features to both students and educators. Explore ways to continually stimulate student interest in the platform, leveraging its potential for enhancing the overall learning experience.

V. CONCLUSION

In conclusion, the emergence of e-getting to know websites as companies of comprehensive examine substances marks a substantial paradigm shift in present day training. those structures have ushered in an era of on hand, bendy, and customized mastering, presenting students across numerous age agencies and educational disciplines a digital treasure trove of resources. The research offered on this paper underscores the transformative effect of such websites, bridging the distance between conventional lecture room learning and self-examine. however, demanding situations inclusive of facts overload and content quality must be addressed. As those digital platforms preserve to adapt, it is imperative that they adapt to satisfy the numerous academic wishes of college students, thereby shaping the future of education within the virtual.

VI. FUTURE WORK

Scientometric and Systematic Synthesis of Literature on COVID-19 and Online Learning" is to use a shorter and simpler term for the type of analysis, and to rephrase the topic of the literature.
Implications and Future Directions

1. Research Trends and Pedagogical Strategies:

The comprehensive analysis of literature pertaining to the COVID-19 pandemic and online learning revealed distinct research trends over 2020 and 2021. Initially, the focus was on the abrupt transition to distance learning globally. In contrast, subsequent studies in 2021 emphasized technology adoption, blended learning, collaborative strategies, and innovative online assessment methods. Notably, pedagogical models like DLPCA and DEAPP have been proposed to facilitate a smooth shift from traditional face-to-face learning to complete online instruction.

2. Challenges and Recommendations:

The pandemic-induced shift posed challenges, including unpreparedness and lack of teacher training for online delivery of laboratory-intensive and mathematical courses, curriculum redesign, and assessment changes. Addressing these challenges, our study suggests proactive educational pedagogies for post-pandemic scenarios. Recommendations include fostering academic collaborations, exchange programs, and resource-sharing among educational institutions to enhance faculty development and student-centered learning. The importance of preparedness for future disruptions is underscored, encouraging leaders to establish effective collaborations and draw insights from recent studies.

3. Future Research Directions:

While existing literature offers insights into challenges faced during the pandemic, there is a notable gap in postpandemic strategies and proactive mechanisms. To maintain educational quality in a changing digital world, future studies need to examine how to improve teaching design, learning approaches, and evaluation techniques. Learning from the experiences of success and failure in various regions and cultures can offer useful lessons. The natural sciences and disciplines that require a lot of lab work, especially in low-income countries, face major challenges in providing practical training and need more attention. Comparing results from different settings and cultures through joint research is recommended.744

4. Global Collaboration and Digital Divide:

Collaboration analysis revealed that developed countries exhibit a high degree of collaboration, while underdeveloped countries have minimal representation, emphasizing the impact of the digital divide. Future research should prioritize cross-country collaborative studies to address disparities. The pandemic has disproportionately affected education in developing countries, necessitating urgent support from international bodies. Researchers can contribute constrained settings.

5. Call for International Support:

The international community, including global industrial country , is urged provide essential support to developing

countries in adopting online learning technologies and infrastructure. High-ranking universities can play a crucial role by offering initiatives. Research in this area can contribute by proposing and evaluating practical solutions to bridge the educational gap exacerbated by the pandemic in developing nations.

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